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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/824,504	04/15/2004	Yuichiro Morita	500.40687CX1	6566

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EXAMINER

SAVLA, ARPAN P

ART UNIT PAPER NUMBER

2185

DATE MAILED: 04/18/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/824,504	Applicant(s) MORITA ET AL.	
	Examiner Arpan P. Savla	Art Unit 2185	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 15 April 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-5 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-5 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 15 April 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☒ Certified copies of the priority documents have been received in Application No. 09/962,257.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>4/15/04</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

The instant application having Application No. 10/824,401 has a total of 16 claims pending in the application, there are 3 independent claims and 13 dependent claims, all of which are ready for examination by Examiner.

INFORMATION CONCERNING OATH/DECLARATION

Oath/Declaration

1. Applicant's oath/declaration has been reviewed by Examiner and is found to conform to the requirements prescribed in 37 CFR 1.63.

STATUS OF CLAIM FOR PRIORITY IN THE APPLICATION

2. Applicant's claim for the benefit of prior-filed application 09/962,257 under 35 U.S.C. 119(e) or under 35 U.S.C. 120, 121, or 365(c) is acknowledged. Also, as required by MPEP § 201.14(c), acknowledgment is made of Applicant's claim for priority based on an application filed in the Japanese Patent Office on May 21, 2001.

INFORMATION CONCERNING DRAWINGS

Drawings

3. Applicant's drawings submitted April 15, 2004 are acceptable for examination purposes.

ACKNOWLEDGMENT OF REFERENCES CITED BY APPLICANT

Information Disclosure Statement

4. As required by MPEP § 609(c), Applicant's submission of the Information Disclosure Statement dated April 15, 2004 is acknowledged by Examiner and cited references have been considered in the examination of the claims now pending. As required by MPEP § 609 c(2), a copy of the PTOL-1449 initialed and dated by Examiner is attached to the instant office action.

OBJECTIONS

Specification

5. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

Claims

6. **Claim 5** is objected to because of the following informalities: the phrase "terminal for receive" on line 2 should read "terminal for receiving."

Appropriate correction is required.

REJECTIONS BASED ON PRIOR ART

Claim Rejections - 35 USC § 102

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

8. **Claims 1-5 are rejected under 35 U.S.C. 102(b) as being anticipated by Nguyen et al. (U.S. Patent 5,732,236).**

9. **As per claim 1**, Nguyen discloses memory controller comprising:

means for receiving, from a processor (col. 2, lines 62-66; col. 3, lines 25-27; Fig. 1, element 10), a request for access to a dynamic random access memory (col. 4, lines 21-26; Fig. 2a, element 38) having a data storage area divided into a plurality of banks each divided into a plurality of pages (col. 3, lines 8-10 and 35-37; Fig. 1, elements 11, 30, 32, 34, and 36); *It should be noted that pg. 15, lines 3-5 of Applicant's specification appear to define this means as an "access arbiter." Nguyen's "prioritizer" is equivalent to Applicant's "access arbiter." It should also be noted that even though the "requesting circuits" comprise multiple devices, when all of the multiple devices are taken as a whole they comprise the "microprocessor" (col. 2, lines 62-66), which is in turn a solitary requesting device. Therefore, Nguyen's "microprocessor" is equivalent to Applicant's "processor."*

and memory control means for activating a page to be accessed (col. 5, lines 49-52; col. 3, lines 39-48; Fig. 2b, element 84), based on said access request from said processor (col. 3, lines 27-32 and 55-59), and executing, before a next request for access to a page to be accessed subsequently by said processor, precharge of said page to be accessed subsequently (col. 4, lines 5-13). *It should be noted that pg. 30, line 17 – pg. 31, line 5 appear to define this control means a "memory control unit." Nguyen's "plurality of memory bank controllers" is equivalent to Applicant's "memory*

control unit.” It should also be noted that “microprocessor” precharges entire banks using a control line, therefore, it follows that the corresponding page within the bank is also precharged. Lastly, please see the italicized citation notes for the limitation above regarding Nguyen’s microprocessor.

10. **As per claim 2**, Nguyen discloses memory controller comprising:

means for receiving, from a processor (col. 2, lines 62-66; col. 3, lines 25-27; Fig. 1, element 10), a request for access to a dynamic random access memory (col. 4, lines 21-26; Fig. 2a, element 38) having a data storage area divided into a plurality of banks each divided into a plurality of pages (col. 3, lines 8-10 and 35-37; Fig. 1, elements 11, 30, 32, 34, and 36); *Please see the italicized citation notes for the first limitation of claim 1 above.*

and memory control means for activating a page to be accessed (col. 5, lines 49-52; col. 3, lines 39-48; Fig. 2b, element 84), based on said access request from said processor (col. 3, lines 27-32 and 55-59), and executing, before a next request for access to a page to be accessed subsequently by said processor, precharge of a bank corresponding to said page to be accessed subsequently (col. 4, lines 5-13). *Please see the italicized citation notes for the second limitation of claim 1 above.*

11. **As per claim 3**, Nguyen discloses a memory controller for use with a processor and a dynamic random access memory, comprising:

a terminal (col. 4, lines 21-26; Fig. 2a, element 38) for receiving a request for access from said processor to a dynamic random access memory having a data storage area divided into a plurality of banks each divided into a plurality of pages (col. 3, lines

8-10 and 35-37; Fig. 1, elements 11, 30, 32, 34, and 36); *It should be noted that Nguyen's "prioritizer" is equivalent to Applicant's "terminal."* Also, please see the italicized citation notes for the first limitation of claim 1 above.

and memory control means for issuing an active command for activating a page to be accessed (col. 5, lines 49-52; col. 3, lines 39-48; Fig. 2b, element 84), based on said access request from said processor (col. 3, lines 27-32 and 55-59), and issuing a precharge command for executing, before a next request for access to a page to be accessed subsequently, precharge of said page to be accessed subsequently (col. 4, lines 5-13). *It should be noted that in any computer system it is inherently required that a controller/processor issue a "command" in order for any action (such as activating a page or executing a precharge) to be carried out. Also, please see the italicized citation notes for the second limitation of claim 1 above.*

12. **As per claim 4**, Nguyen discloses a memory controller for use with a processor and a dynamic random access memory, comprising:

a terminal (col. 4, lines 21-26; Fig. 2a, element 38) for receiving a request for access from said processor to a dynamic random access memory having a data storage area divided into a plurality of banks each divided into a plurality of pages (col. 3, lines 8-10 and 35-37; Fig. 1, elements 11, 30, 32, 34, and 36); *Please see the italicized citation notes for the first limitations of both claim 1 and claim 3 above.*

and memory control means for issuing an active command for activating a page to be accessed (col. 5, lines 49-52; col. 3, lines 39-48; Fig. 2b, element 84), based on said access request from said processor (col. 3, lines 27-32 and 55-59), and issuing a

precharge command for executing, before a next request for access to a page to be accessed subsequently, precharge of a bank corresponding to said page to be accessed subsequently (col. 4, lines 5-13). *Please see the italicized citation notes for the second limitations of both claim 1 and claim 3 above.*

13. **As per claim 5**, Nguyen discloses a memory controller comprising:

a terminal (col. 4, lines 21-26; Fig. 2a, element 38) for receive a request for access from said processor to a dynamic random access memory having a data storage area divided into a plurality of banks each divided into a plurality of pages (col. 3, lines 8-10 and 35-37; Fig. 1, elements 11, 30, 32, 34, and 36); *Please see the italicized citation notes for the first limitations of both claim 1 and claim 3 above.*

and a memory control unit to activate a page to be accessed (col. 5, lines 49-52; col. 3, lines 39-48; Fig. 2b, element 84), based on said access request from said processor (col. 3, lines 27-32 and 55-59), and to execute, before a next request for access to a page to be accessed subsequently by said processor, precharge of said page to be accessed subsequently (col. 4, lines 5-13). *It should be noted that Nguyen's "plurality of memory bank controllers" is equivalent to Applicant's "memory control unit." Also, please see the italicized citation notes for the second limitation of claim 1 above.*

Conclusion

STATUS OF CLAIMS IN THE APPLICATION

The following is a summary of the treatment and status of all claims in the application as recommended by MPEP 707.70(i):

CLAIMS REJECTED IN THE APPLICATION

Per the instant office action, **claims 1-5** have received a first action on the merits and are subject of a first action non-final.

RELEVANT ART CITED BY THE EXAMINER

The following prior art made of record and not relied upon is cited to establish the level of skill in Applicant's art and those arts considered reasonably pertinent to Applicant's disclosure. See MPEP 707.05(e).

1. U.S. Patent 5,903,509 discloses an SDRAM in which a memory array and associated circuitry are divided into multiple internally defined circuit banks and commands and addresses applied to the memory device affect all internal banks identically, but on a time-staggered basis.
2. U.S. Patent 6,233,661 discloses a memory controller that is capable of arbitrating among pending memory requests, and in certain situations, starting the next cycle while the current cycle is finishing. This allows executing at least two memory requests concurrently.

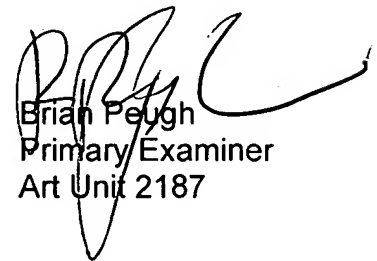
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Arpan P. Savla whose telephone number is (571) 272-1077. The examiner can normally be reached on M-F 8:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Donald Sparks can be reached on (571) 272-4201. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



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April 14, 2006



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